

AMENDMENTS TO THE CLAIMS

Claims 1-20 (Cancelled).

21. (Currently Amended) A tapered roller bearing comprising:

an outer ring having a conical raceway;

~~an~~ a steel inner ring having a conical raceway and having a large rib surface on a large diameter side of said conical raceway;

a plurality of steel tapered rollers rollably arranged between said raceway of said outer ring and said raceway of said inner ring; and

a retainer for keeping said tapered rollers circumferentially spaced apart a predetermined distance from each other;

said large rib surface of said inner ring having:

a conical surface for contacting large end faces of said tapered rollers; ~~and~~

a flank smoothly connected to said conical surface and curving away from said large end faces of said tapered rollers; and

a chamfer connected to a radially outer edge of said flank;

said large rib surface being shaped such that a boundary between said conical surface and said flank is located at an outer edge of a maximum contact oval formed by the contact between said large end ~~faces~~ face of each of said tapered rollers and said conical surface of said large rib surface ~~under a maximum permissible axial load of said tapered roller bearing,~~ and such that a wedge-shaped space is defined between said flank and said large end ~~faces~~ face of each of said tapered rollers, said wedge-shaped space being shaped and arranged to for smoothly drawing draw lubricating oil from an outer location to a location between said conical surface and said large end faces face of each of said tapered rollers so as to at least minimize damage to said large end faces of said tapered rollers if said tapered rollers are skewed relative to said inner ring during operation of said tapered roller bearing.

22. (Previously Presented) The tapered roller bearing of claim 21, wherein said flank has a circular section.

23. (Currently Amended) The tapered roller bearing of claim 22, wherein ~~each of~~ said large end ~~faces~~ face of each of said tapered rollers has a circular recess at a central portion thereof, and an outer periphery of said recess extends to said boundary between said conical surface and said flank of said large rib surface.

24. (Currently Amended) The tapered roller bearing of claim 21, wherein ~~each of~~ said large end ~~faces~~ face of each of said tapered rollers has a circular recess at a central portion thereof, and an outer periphery of said recess extends to said boundary between said conical surface and said flank of said large rib surface.

Claim 25 (Cancelled).

26. (Currently Amended) A gear shaft support device for supporting a gear shaft in a vehicle, comprising:

a housing comprising gear oil sealed therein;

tapered roller bearings in said housing for rotatably supporting the gear shaft, each of said tapered roller bearings including:

an outer ring;

~~an~~ a steel inner ring having a large rib surface; and

a plurality of steel tapered rollers;

said large rib surface of said inner ring having:

a conical surface for contacting large end faces of said tapered rollers; ~~and~~

a flank smoothly connected to said conical surface and curving away from said large end faces of said tapered rollers; and

a chamfer connected to a radially outer edge of said flank;

said large rib surface being shaped such that a boundary between said conical surface and said flank is located at an outer edge of a maximum contact oval formed by the contact between said large end ~~faces~~ face of each of said tapered rollers and said conical surface of said large rib surface ~~under a maximum permissible axial load of each said tapered roller bearings~~, and such that a wedge-shaped space is defined between said flank and said large end ~~faces~~ face of each of said tapered rollers, said wedge-shaped space being shaped and arranged to for smoothly drawing draw lubricating oil from an outer location to a location between said conical surface and said large end faces face of each of said tapered rollers so as to at least minimize damage to said large end faces of said tapered rollers if said tapered rollers are skewed relative to said inner ring during operation of said tapered roller bearing.

27. (Currently Amended) The ~~tapered roller bearing~~ gear shaft support device of claim 26, wherein said flank of said inner ring of each of said tapered roller bearings has a circular section.

28. (Currently Amended) The ~~tapered roller bearing~~ gear shaft support device of claim 27, wherein ~~each of~~ said large end ~~faces~~ face of each of said tapered rollers has a circular recess at a central portion thereof, and an outer periphery of said recess extends to said boundary between said conical surface and said flank of said large rib surface.

29. (Currently Amended) The ~~tapered roller bearing~~ gear shaft support device of claim 26, wherein ~~each of~~ said large end ~~faces~~ face of each of said tapered rollers has a circular recess at a central portion thereof, and an outer periphery of said recess extends to said boundary between said conical surface and said flank of said large rib surface.

Claim 30 (Cancelled).

31. (New) The tapered roller bearing of claim 21, wherein a radius of curvature of said chamfer is different than a radius of curvature of said flank.

32. (New) The gear shaft support device of claim 26, wherein a radius of curvature of said chamfer is different than a radius of curvature of said flank.